We claim:

1. An encoding system for a multi-antenna transmitter, comprising:

a feed unit receiving data and producing N data streams, where N is at least two;

N encoders, each encoder receiving a respective one of the N data streams and producing an encoded data stream;

a multiple input multiple output (MIMO) encoder receiving the N encoded data streams and encoding the N encoded data streams into M output data stream for transmission by M antennas, where M is at least two.

2. The system of claim 1, wherein each of the N encoders operates according to a same encoding algorithm

3. The system of claim 1, wherein one of the N encoders operates according to a first encoding algorithm, another of the N encoders operates according to a second encoding algorithm, and the first and second encoding algorithms are different.

4. The system of claim 1, wherein the MIMO encoder operates according to the double space time transmit diversity (DSTTD) algorithm.

5. The system of claim 4, wherein N is two and M is four.

6. The system of claim 1, wherein N equals M.

7. The system of claim 1, wherein N is less than M.

8. The system of claim 1, wherein N is greater than M.

9. The system of claim 1, wherein the feed unit is a demultiplexer.

10. A decoding system for a multi-antenna receiver, comprising:

a multiple input multiple output (MIMO) decoder receiving T data streams and decoding the T data streams into N data streams;

N decoders, each decoder receiving a respective one of the N data streams and producing N decoded data streams; and

a combiner combining the N decoded data streams into an output data stream.

11. The system of claim 10, wherein each of the N decoders operates according to a same decoding algorithm

12. The system of claim 10, wherein one of the N decoders operates according to a first decoding algorithm, another of the N decoders operates according to a second decoding algorithm, and the first and second decoding algorithms are different.

13. The system of claim 10, wherein the MIMO decoder operates according to the double space time transmit diversity (DSTTD) algorithm.

14. The system of claim 10, wherein N equals M.

15. The system of claim 10, wherein N is less than M.

16. The system of claim 10, wherein N is greater than M.

17. The system of claim 10, wherein the combiner is a multiplexer.

18. An encoding and decoding system for a communication system having multi-antenna transmitter and multi-antenna receiver, comprising:

a feed unit receiving data and producing N data streams, where N is at least two;

N encoders, each encoder receiving a respective one of the N data streams and producing an encoded data stream;

a multiple input multiple output (MIMO) encoder receiving the N encoded data streams and encoding the N encoded data streams into M output data stream for transmission by M transmit antennas, where M is at least two;

a multiple input multiple output (MIMO) decoder receiving T data streams from T receive antennas and decoding the T data streams into the N encoded data streams;

N decoders, each decoder receiving a respective one of the N encoded data streams from the MIMO decoder and producing N decoded data streams; and

a combiner combining the N decoded data streams into an output data stream.